Amendments to the Specification:

Please amend paragraph on page 16, beginning at line 3 as follows:

An additional, fundamental assumption is that SLAs (Service Level Agreements) are sold so that if all pipes at all times have constant offered loads less than or equal to their guaranteed minimum (min) values, then all excess bandwidth signals are always 1. At such offered loads, all SLAs of all pipes using the IIC are honored by the switch, and all B signals are 1.

Please amend paragraph on page 21, beginning at line 3 as follows:

Further details of flow control in an IIC are depicted in Figure 6. An IIC 80 utilizes administrative information 82 (reflecting the paths of the pipes in the network as well as the bandwidth guarantees of the pipes). An IIC also uses frequent values of a congestion signal from the switch 84. This information is ~~uses~~ used in an implementation of BAT 96 in the IIC. A datagram enters the IIC in an input 86 and BAT flow control decides to drop the datagram 100 or transmit the datagram 98. If transmitted, the datagram flows into the switch 94 in a wire 90. Datagrams depart the switch in a wire 92 that, if the IIC is a PHY, are converted into photonic form. In any event, the IIC endows departing datagrams with appropriate timing structure so they may be sent to the next computer network node through link 88.

Please amend paragraph on page 30, beginning at line 4 as follows:

Alternative embodiments might use the MPLS header to designate different pipes, including the 20-bit MPLS label and the three MPLS EXP bits. See Internet Draft "MPLS

Label Stack Encoding," draft-ietf-mpls-label-encaps-07.txt, IETF Network Working Group, September 1999, E. Rosen, Y. Rekhter, D. Tappan, D. Farinacci, G. Fedorkow, T. Li, A. Conta. The present invention includes examination of all header types according to various standards ~~frome~~ from which Quality of Service information can be conveniently and quickly extracted, all for the purpose of aggregating datagrams into a relatively small number of logical pipes passing through a switch or network.

Please amend paragraph on page 37, beginning at line 12 as follows:

The present invention is most advantageously deployed in conjunction with flow control algorithms that use control theory to enforce flow control, such as Bandwidth Allocation Technology (BAT). BAT uses ordinary performance criteria (minimum guaranteed bandwidth and maximum limit on bandwidth), not abstract thresholds as in RED or WRED. BAT declares 100% transmission for pipes that are at or below their minimum bandwidth guarantees. BAT fairly allocates bandwidth among pipes with offered loads above their guaranteed minimums. Also, BAT may run queue (Queue and pipe are used interchangeably in this document) occupancy routinely at low levels, in contrast to RED or WRED mechanism that, to work at all, must run queue occupancy somewhere between various low and high thresholds.

Please amend paragraph on page 38, beginning at line 15 as follows:

Figure 13 shows a logical representation of the present invention. The present invention enables proactive flow control in the logical path upstream of a switch. Initialization 248 is enabled in a Management Console 250. The Management Console communicates information on pipes and their SLAs to network nodes. The logic in a Input Interface Circuit ~~(ICC)~~ (IIC) in such a node is delimited by the heavy line 252. The constants

from the management console are kept and processed (such as normalized relative to switch physical parameters) in the Control Point (CP) 254. Each IIC 252 stores the appropriate constants pertaining to the logical pipes that pass through it. These processes are typically at relatively low data rates and the upper dashed line in Figure 13 delineates these processes. Below the same line are flow control update processes 258. The exponentially weighted average E of excess bandwidth signals is stored 260. As previously described in Figures 7, 8, 9, switch queue occupancy counters 262 report values to the control point that in turn are communicated as an excess bandwidth signal B 266. B is used to update E 270. B is also used, with E, to update the transmit probability fractions for the pipes in the IIC. IIC counters 264 record flow rates in pipes. Transmitted flow rates {fi} for pipes 268 are also accumulated. Transmit probability fractions {Ti} are stored 274. The values of E, B, {fi}, and {Ti} are used by BAT flow control algorithm 272 to calculate new transmit probability fractions. In a preferred embodiment, logic for updating the flow control transmission fractions might reside in the IIC. (In an alternative embodiment, logic for updating the flow control transmission fractions might reside in the Flow Control Data organization block depicted in Figure 14.) The lower dashed line in Figure 13 delimits these processes. Below that line are data flow processes 280. Frames arrive and are examined for identity 282. Concurrently random numbers are generated 284. As a frame arrives, its identity is used to select a transmit probability Ti 286 from the {Ti} storage table. Then Ti and the random number are compared 288. If the transmit probability is greater than or equal to the random number, then the transmit decision 290 is: transmit. Else the transmit decision is: discard.